SEQUENCE LISTING

<110> Kindl, Helmut
     May, Christian
     Feussner, Ivo

<120> The N-terminal beta-barrel structure of lipid body lipoxygenase mediates its binding to liposomes and lipid bodies

<130> 99_1235

<140> US 10/089,147
<141> Filing date not yet granted

<150> PCT/EP/00/09912
<151> 2000-10-10

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Met Phe Gly Ile Gly Lys Asn Ile Ile Glu Gly Ala Leu Asn Thr Thr
  1           5                  10                  15

gga gat ctt gca ggt tct gtt atc aat gct ggt ggt aac att tta gat      96
Gly Asp Leu Ala Gly Ser Val Ile Asn Ala Gly Gly Asn Ile Leu Asp
              20                  25                  30

aga gtt tcc agt ctt gga gga aac aaa atc aaa ggg aaa gtg att ctt     144
Arg Val Ser Ser Leu Gly Gly Asn Lys Ile Lys Gly Lys Val Ile Leu
          35                  40                  45

atg aga agc aat gtt ttg gat ttc act gaa ttt cat tcc aat ctt ctt     192
Met Arg Ser Asn Val Leu Asp Phe Thr Glu Phe His Ser Asn Leu Leu
      50                  55                  60

gat aac ttc act gag ctc ttg ggt ggt ggt gtt tct ttc caa ctc att     240
Asp Asn Phe Thr Glu Leu Leu Gly Gly Gly Val Ser Phe Gln Leu Ile
 65                  70                  75                  80

agt gcc act cat act tca aat gac tca aga ggg aaa gtt ggg aac aag     288
Ser Ala Thr His Thr Ser Asn Asp Ser Arg Gly Lys Val Gly Asn Lys
                  85                  90                  95
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gca tat ttg gag agg tgg cta act tca atc cca cca ctg ttt gct gga     336
Ala Tyr Leu Glu Arg Trp Leu Thr Ser Ile Pro Pro Leu Phe Ala Gly
        100                 105                 110

gaa tca gtg ttc caa atc aac ttt caa tgg gat gaa aat ttt gga ttt     384
Glu Ser Val Phe Gln Ile Asn Phe Gln Trp Asp Glu Asn Phe Gly Phe
            115                 120                 125

cca gga gct ttc ttc ata aaa aat gga cat aca agt gaa ttc ttt ctc     432
Pro Gly Ala Phe Phe Ile Lys Asn Gly His Thr Ser Glu Phe Phe Leu
        130                 135                 140

aaa tct ctc act ctt gat gat gtt cct ggc tat ggc aga gtc cat ttt     480
Lys Ser Leu Thr Leu Asp Asp Val Pro Gly Tyr Gly Arg Val His Phe
145                 150                 155                 160

gat tgc aat tct tgg gtt tac cct tct gga aga tac aag aaa gat cgc     528
Asp Cys Asn Ser Trp Val Tyr Pro Ser Gly Arg Tyr Lys Lys Asp Arg
                165                 170                 175

att ttc ttt gcc aat cat gtt tat ctt cca agt caa aca cca aac cct     576
Ile Phe Phe Ala Asn His Val Tyr Leu Pro Ser Gln Thr Pro Asn Pro
            180                 185                 190

ctt cgt aag tat aga gag gaa gaa ttg tgg aat ttg aga gga gat gga     624
Leu Arg Lys Tyr Arg Glu Glu Glu Leu Trp Asn Leu Arg Gly Asp Gly
        195                 200                 205

aca gga gaa aga aag gaa tgg gat aga att tat gac tat gat gtt tat     672
Thr Gly Glu Arg Lys Glu Trp Asp Arg Ile Tyr Asp Tyr Asp Val Tyr
        210                 215                 220

aat gac att gct gac cct gat gtt ggt gat cat cgt cct att ctc ggt     720
Asn Asp Ile Ala Asp Pro Asp Val Gly Asp His Arg Pro Ile Leu Gly
225                 230                 235                 240

ggg acg acc gaa                                                     732
Gly Thr Thr Glu
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Met Phe Gly Ile Gly Lys Asn Ile Ile Glu Gly Ala Leu Asn Thr Thr
  1               5                  10                  15

Gly Asp Leu Ala Gly Ser Val Ile Asn Ala Gly Gly Asn Ile Leu Asp
            20                  25                  30

Arg Val Ser Ser Leu Gly Gly Asn Lys Ile Lys Gly Lys Val Ile Leu
        35                  40                  45
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Met Arg Ser Asn Val Leu Asp Phe Thr Glu Phe His Ser Asn Leu Leu
    50                  55                  60

Asp Asn Phe Thr Glu Leu Leu Gly Gly Gly Val Ser Phe Gln Leu Ile
 65                  70                  75                      80

Ser Ala Thr His Thr Ser Asn Asp Ser Arg Gly Lys Val Gly Asn Lys
                85                  90                  95

Ala Tyr Leu Glu Arg Trp Leu Thr Ser Ile Pro Pro Leu Phe Ala Gly
            100                 105                 110

Glu Ser Val Phe Gln Ile Asn Phe Gln Trp Asp Glu Asn Phe Gly Phe
            115                 120                 125

Pro Gly Ala Phe Phe Ile Lys Asn Gly His Thr Ser Glu Phe Phe Leu
    130                 135                 140

Lys Ser Leu Thr Leu Asp Asp Val Pro Gly Tyr Gly Arg Val His Phe
145                 150                 155                 160

Asp Cys Asn Ser Trp Val Tyr Pro Ser Gly Arg Tyr Lys Lys Asp Arg
                165                 170                 175

Ile Phe Phe Ala Asn His Val Tyr Leu Pro Ser Gln Thr Pro Asn Pro
                180                 185                 190

Leu Arg Lys Tyr Arg Glu Glu Glu Leu Trp Asn Leu Arg Gly Asp Gly
            195                 200                 205

Thr Gly Glu Arg Lys Glu Trp Asp Arg Ile Tyr Asp Tyr Asp Val Tyr
    210                 215                 220

Asn Asp Ile Ala Asp Pro Asp Val Gly Asp His Arg Pro Ile Leu Gly
225                 230                 235                 240

Gly Thr Thr Glu

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                                                    Met Phe Gly
                                                      1

att ggg aag aac atc att gaa ggg gcc ttg aat aca act gga gat ctt   104
Ile Gly Lys Asn Ile Ile Glu Gly Ala Leu Asn Thr Thr Gly Asp Leu
      5                  10                  15
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gca ggt tct gtt atc aat gct ggt ggt aac att tta gat aga gtt tcc    152
Ala Gly Ser Val Ile Asn Ala Gly Gly Asn Ile Leu Asp Arg Val Ser
 20              25              30                  35

agt ctt gga gga aac aaa atc aaa ggg aaa gtg att ctt atg aga agc    200
Ser Leu Gly Gly Asn Lys Ile Lys Gly Lys Val Ile Leu Met Arg Ser
                40              45              50

aat gtt ttg gat ttc act gaa ttt cat tcc aat ctt ctt gat aac ttc    248
Asn Val Leu Asp Phe Thr Glu Phe His Ser Asn Leu Leu Asp Asn Phe
            55              60              65

act gag ctc ttg ggt ggt ggt gtt tct ttc caa ctc att agt gcc act    296
Thr Glu Leu Leu Gly Gly Gly Val Ser Phe Gln Leu Ile Ser Ala Thr
        70              75              80

cat act tca aat gac tca aga ggg aaa gtt ggg aac aag gca tat ttg    344
His Thr Ser Asn Asp Ser Arg Gly Lys Val Gly Asn Lys Ala Tyr Leu
    85              90              95

gag agg tgg cta act tca atc cca cca ctg ttt gct gga gaa tca gtg    392
Glu Arg Trp Leu Thr Ser Ile Pro Pro Leu Phe Ala Gly Glu Ser Val
100             105             110             115

ttc caa atc aac ttt caa tgg gat gaa aat ttt gga ttt cca gga gct    440
Phe Gln Ile Asn Phe Gln Trp Asp Glu Asn Phe Gly Phe Pro Gly Ala
                120             125             130

ttc ttc ata aaa aat gga cat aca agt gaa ttc ttt ctc aaa tct ctc    488
Phe Phe Ile Lys Asn Gly His Thr Ser Glu Phe Phe Leu Lys Ser Leu
            135             140             145

act ctt gat gat gtt cct ggc tat ggc aga gtc cat ttt gat tgc aat    536
Thr Leu Asp Asp Val Pro Gly Tyr Gly Arg Val His Phe Asp Cys Asn
            150             155             160

tct tgg gtt tac cct tct gga aga tac aag aaa gat cgc att ttc ttt    584
Ser Trp Val Tyr Pro Ser Gly Arg Tyr Lys Lys Asp Arg Ile Phe Phe
    165             170             175

gcc aat cat gtt tat ctt cca agt caa aca cca aac cct ctt cgt aag    632
Ala Asn His Val Tyr Leu Pro Ser Gln Thr Pro Asn Pro Leu Arg Lys
180             185             190             195

tat aga gag gaa gaa ttg tgg aat ttg aga gga gat gga aca gga gaa    680
Tyr Arg Glu Glu Glu Leu Trp Asn Leu Arg Gly Asp Gly Thr Gly Glu
                200             205             210

aga aag gaa tgg gat aga att tat gac tat gat gtt tat aat gac att    728
Arg Lys Glu Trp Asp Arg Ile Tyr Asp Tyr Asp Val Tyr Asn Asp Ile
            215             220             225

gct gac cct gat gtt ggt gat cat cgt cct att ctc ggt ggg acg acc    776
Ala Asp Pro Asp Val Gly Asp His Arg Pro Ile Leu Gly Gly Thr Thr
        230             235             240
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gaa tat cct tac cct cgt agg gga aga aca gga cga cca cga tca aga    824
Glu Tyr Pro Tyr Pro Arg Arg Gly Arg Thr Gly Arg Pro Arg Ser Arg
    245             250             255

aga gac cac aat tat gag agc aga ttg tca cca ata atg agc tta gac    872
Arg Asp His Asn Tyr Glu Ser Arg Leu Ser Pro Ile Met Ser Leu Asp
260             265             270             275

atc tat gta cca aaa gat gaa aac ttt ggg cat ttg aag atg tca gat    920
Ile Tyr Val Pro Lys Asp Glu Asn Phe Gly His Leu Lys Met Ser Asp
            280             285             290

ttc ctt ggt tat aca tta aaa gca ctt tcg ata tca atc aaa cca gga    968
Phe Leu Gly Tyr Thr Leu Lys Ala Leu Ser Ile Ser Ile Lys Pro Gly
            295             300             305

ctt caa tcc ata ttt gat gta act cca aat gaa ttt gac aat ttt aaa   1016
Leu Gln Ser Ile Phe Asp Val Thr Pro Asn Glu Phe Asp Asn Phe Lys
            310             315             320

gaa gtt gat aat ctc ttt gag aga ggt ttt ccc att cca ttt aat gct   1064
Glu Val Asp Asn Leu Phe Glu Arg Gly Phe Pro Ile Pro Phe Asn Ala
    325             330             335

ttt aag acc ctc act gag gac ctc act cca cct ttg ttc aaa gca ctc   1112
Phe Lys Thr Leu Thr Glu Asp Leu Thr Pro Pro Leu Phe Lys Ala Leu
340             345             350             355

gtg agg aat gat ggt gaa aaa ttc ctc aaa ttt cct act ccc gaa gtt   1160
Val Arg Asn Asp Gly Glu Lys Phe Leu Lys Phe Pro Thr Pro Glu Val
            360             365             370

gtc aaa gat aat aaa ata gga tgg agc act gat gaa gaa ttt gca aga   1208
Val Lys Asp Asn Lys Ile Gly Trp Ser Thr Asp Glu Glu Phe Ala Arg
            375             380             385

gaa atg tta gca gga ccc aat cct cta ttg att cgt cgt ctt gaa gct   1256
Glu Met Leu Ala Gly Pro Asn Pro Leu Leu Ile Arg Arg Leu Glu Ala
    390             395             400

ttt cca cca aca agt aag ctt gac cca aat gtt tat ggg aat caa aac   1304
Phe Pro Pro Thr Ser Lys Leu Asp Pro Asn Val Tyr Gly Asn Gln Asn
    405             410             415

agt acc atc act gaa gaa cac ata aag cat ggt tta gat ggt ctt acg   1352
Ser Thr Ile Thr Glu Glu His Ile Lys His Gly Leu Asp Gly Leu Thr
420             425             430             435

gtt gat gag gca atg aag caa aac agg ctc tac ata gtg gat ttc cat   1400
Val Asp Glu Ala Met Lys Gln Asn Arg Leu Tyr Ile Val Asp Phe His
            440             445             450

gat gca tta atg ccc tat ctt aca agg atg aat gca aca tca aca aaa   1448
Asp Ala Leu Met Pro Tyr Leu Thr Arg Met Asn Ala Thr Ser Thr Lys
            455             460             465
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aca tat gcc aca aga aca ttg ctt ctt ttg aaa gat gat ggg act ttg      1496
Thr Tyr Ala Thr Arg Thr Leu Leu Leu Leu Lys Asp Asp Gly Thr Leu
        470             475             480

aag cca ttg gtt att gag tta gcc ttg cca cat cct caa gga gat caa      1544
Lys Pro Leu Val Ile Glu Leu Ala Leu Pro His Pro Gln Gly Asp Gln
        485             490             495

ctt ggt gcc att agc aaa cta tac ttt cca gct gaa aat gga gtt caa      1592
Leu Gly Ala Ile Ser Lys Leu Tyr Phe Pro Ala Glu Asn Gly Val Gln
500             505             510             515

aaa tcc att tgg caa ttg gct aaa gct tat gta act gtt aat gat gtt      1640
Lys Ser Ile Trp Gln Leu Ala Lys Ala Tyr Val Thr Val Asn Asp Val
            520             525             530

ggc tac cat caa ctt att agt cat tgg ttg cat act cat gct gta ctt      1688
Gly Tyr His Gln Leu Ile Ser His Trp Leu His Thr His Ala Val Leu
            535             540             545

gag cca ttt gtg att gca aca cat aga caa ttg agc gtg ctt cat cca      1736
Glu Pro Phe Val Ile Ala Thr His Arg Gln Leu Ser Val Leu His Pro
        550             555             560

atc cat aag ttg ctt gtt cct cat tac aaa gac act atg ttt ata aat      1784
Ile His Lys Leu Leu Val Pro His Tyr Lys Asp Thr Met Phe Ile Asn
        565             570             575

gca tct gca aga caa gtt ttg atc aat gcc aat ggt ctt atc gaa aca      1832
Ala Ser Ala Arg Gln Val Leu Ile Asn Ala Asn Gly Leu Ile Glu Thr
580             585             590             595

acc cat tat cca tca aaa tat tca atg gag ttg tca tct atc ttg tac      1880
Thr His Tyr Pro Ser Lys Tyr Ser Met Glu Leu Ser Ser Ile Leu Tyr
            600             605             610

aag gat tgg acc ttc cct gat caa gca tta cct aat aat ctc atg aag      1928
Lys Asp Trp Thr Phe Pro Asp Gln Ala Leu Pro Asn Asn Leu Met Lys
            615             620             625

aga gga cta gct gtg gag gac tca agt gcc ccc cat gga ctt aga ttg      1976
Arg Gly Leu Ala Val Glu Asp Ser Ser Ala Pro His Gly Leu Arg Leu
            630             635             640

cta ata aat gat tat cca ttt gct gtt gat ggt ctt gac att tgg tca      2024
Leu Ile Asn Asp Tyr Pro Phe Ala Val Asp Gly Leu Asp Ile Trp Ser
            645             650             655

gcc att aaa aca tgg gta cag gat tat tgc tgt ctc tac tac aaa gat      2072
Ala Ile Lys Thr Trp Val Gln Asp Tyr Cys Cys Leu Tyr Tyr Lys Asp
660             665             670             675

gac aat gca gta caa aat gac ttt gaa ctc caa tct tgg tgg aat gag      2120
Asp Asn Ala Val Gln Asn Asp Phe Glu Leu Gln Ser Trp Trp Asn Glu
            680             685             690
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cta aga gag aaa ggc cac gct gac aag aaa cat gaa cca tgg tgg cca    2168
Leu Arg Glu Lys Gly His Ala Asp Lys Lys His Glu Pro Trp Trp Pro
            695             700             705

aaa atg caa act tta agt gaa tta atc gaa tcc tgc act aca att ata    2216
Lys Met Gln Thr Leu Ser Glu Leu Ile Glu Ser Cys Thr Thr Ile Ile
        710             715             720

tgg att gct tca gct ctt cat gcc gca gtt aac ttt gga caa tat ccc    2264
Trp Ile Ala Ser Ala Leu His Ala Ala Val Asn Phe Gly Gln Tyr Pro
    725             730             735

tac gga ggc tat att ctc aat cga cca act aca agt cgt agg ttc atg    2312
Tyr Gly Gly Tyr Ile Leu Asn Arg Pro Thr Thr Ser Arg Arg Phe Met
740             745             750             755

cct gaa gtt ggc acg gct gag tac aaa gaa ctg gaa tcg aat ccc gaa    2360
Pro Glu Val Gly Thr Ala Glu Tyr Lys Glu Leu Glu Ser Asn Pro Glu
            760             765             770

aaa gct ttc ttg aga aca ata tgt tca gaa tta caa gca ctt gtt agt    2408
Lys Ala Phe Leu Arg Thr Ile Cys Ser Glu Leu Gln Ala Leu Val Ser
            775             780             785

att tca att att gaa atc ttg tca aag cat gct tct gat gaa gtt tat    2456
Ile Ser Ile Ile Glu Ile Leu Ser Lys His Ala Ser Asp Glu Val Tyr
        790             795             800

ctt gga caa aga gct tca att gat tgg act tca gat aaa att gca ttg    2504
Leu Gly Gln Arg Ala Ser Ile Asp Trp Thr Ser Asp Lys Ile Ala Leu
    805             810             815

gaa gca ttt gag aaa ttt ggg aaa aat tta ttt gaa gtt gag aat agg    2552
Glu Ala Phe Glu Lys Phe Gly Lys Asn Leu Phe Glu Val Glu Asn Arg
820             825             830             835

atc atg gaa agg aat aaa gag gtg aat ttg aag aat aga tct gga cct    2600
Ile Met Glu Arg Asn Lys Glu Val Asn Leu Lys Asn Arg Ser Gly Pro
            840             845             850

gtt aat ttg cct tat act cta ctt gtt cca tca agt aac gaa gga ctc    2648
Val Asn Leu Pro Tyr Thr Leu Leu Val Pro Ser Ser Asn Glu Gly Leu
            855             860             865

act gga aga gga att cct aat agt att tct atc taa gttgataaga         2694
Thr Gly Arg Gly Ile Pro Asn Ser Ile Ser Ile
            870             875

aagaaaagtg gttctttta tgggtgacgt gtgtaatttg aaggtcacaa attacatttt   2754

aagttgccca cattattatt atgaaggaaa taaatgacca tatttttagt ttaatttaaa   2814

ttaggtagct atagccaact ttaggctctg ttggatttgg aactatctcc aacttatata   2874

tgtactttgt actactattt gatgaataaa agttgtgtgt cttaagaata aaaaaaaaaa   2934
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa   2964

<210> 4
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<212> PRT
<213> Cucumis sativus

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            20   25   30

Arg Val Ser Ser Leu Gly Gly Asn Lys Ile Lys Gly Lys Val Ile Leu
        35   40   45

Met Arg Ser Asn Val Leu Asp Phe Thr Glu Phe His Ser Asn Leu Leu
    50   55   60

Asp Asn Phe Thr Glu Leu Leu Gly Gly Gly Val Ser Phe Gln Leu Ile
65   70   75   80

Ser Ala Thr His Thr Ser Asn Asp Ser Arg Gly Lys Val Gly Asn Lys
                85   90   95

Ala Tyr Leu Glu Arg Trp Leu Thr Ser Ile Pro Pro Leu Phe Ala Gly
            100   105   110

Glu Ser Val Phe Gln Ile Asn Phe Gln Trp Asp Glu Asn Phe Gly Phe
        115   120   125

Pro Gly Ala Phe Phe Ile Lys Asn Gly His Thr Ser Glu Phe Phe Leu
    130   135   140

Lys Ser Leu Thr Leu Asp Asp Val Pro Gly Tyr Gly Arg Val His Phe
145   150   155   160

Asp Cys Asn Ser Trp Val Tyr Pro Ser Gly Arg Tyr Lys Lys Asp Arg
                165   170   175

Ile Phe Phe Ala Asn His Val Tyr Leu Pro Ser Gln Thr Pro Asn Pro
            180   185   190

Leu Arg Lys Tyr Arg Glu Glu Glu Leu Trp Asn Leu Arg Gly Asp Gly
        195   200   205

Thr Gly Glu Arg Lys Glu Trp Asp Arg Ile Tyr Asp Tyr Asp Val Tyr
    210   215   220

Asn Asp Ile Ala Asp Pro Asp Val Gly Asp His Arg Pro Ile Leu Gly
225   230   235   240

Gly Thr Thr Glu Tyr Pro Tyr Pro Arg Arg Gly Arg Thr Gly Arg Pro

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                    245                   250                   255

Arg Ser Arg Arg Asp His Asn Tyr Glu Ser Arg Leu Ser Pro Ile Met
            260                   265                   270

Ser Leu Asp Ile Tyr Val Pro Lys Asp Glu Asn Phe Gly His Leu Lys
            275                   280                   285

Met Ser Asp Phe Leu Gly Tyr Thr Leu Lys Ala Leu Ser Ile Ser Ile
    290                   295                   300

Lys Pro Gly Leu Gln Ser Ile Phe Asp Val Thr Pro Asn Glu Phe Asp
305                   310                   315                   320

Asn Phe Lys Glu Val Asp Asn Leu Phe Glu Arg Gly Phe Pro Ile Pro
                325                   330                   335

Phe Asn Ala Phe Lys Thr Leu Thr Glu Asp Leu Thr Pro Pro Leu Phe
            340                   345                   350

Lys Ala Leu Val Arg Asn Asp Gly Glu Lys Phe Leu Lys Phe Pro Thr
            355                   360                   365

Pro Glu Val Val Lys Asp Asn Lys Ile Gly Trp Ser Thr Asp Glu Glu
    370                   375                   380

Phe Ala Arg Glu Met Leu Ala Gly Pro Asn Pro Leu Leu Ile Arg Arg
385                   390                   395                   400

Leu Glu Ala Phe Pro Pro Thr Ser Lys Leu Asp Pro Asn Val Tyr Gly
                405                   410                   415

Asn Gln Asn Ser Thr Ile Thr Glu Glu His Ile Lys His Gly Leu Asp
            420                   425                   430

Gly Leu Thr Val Asp Glu Ala Met Lys Gln Asn Arg Leu Tyr Ile Val
            435                   440                   445

Asp Phe His Asp Ala Leu Met Pro Tyr Leu Thr Arg Met Asn Ala Thr
    450                   455                   460

Ser Thr Lys Thr Tyr Ala Thr Arg Thr Leu Leu Leu Leu Lys Asp Asp
465                   470                   475                   480

Gly Thr Leu Lys Pro Leu Val Ile Glu Leu Ala Leu Pro His Pro Gln
            485                   490                   495

Gly Asp Gln Leu Gly Ala Ile Ser Lys Leu Tyr Phe Pro Ala Glu Asn
            500                   505                   510

Gly Val Gln Lys Ser Ile Trp Gln Leu Ala Lys Ala Tyr Val Thr Val
            515                   520                   525

Asn Asp Val Gly Tyr His Gln Leu Ile Ser His Trp Leu His Thr His
    530                   535                   540
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Ala Val Leu Glu Pro Phe Val Ile Ala Thr His Arg Gln Leu Ser Val
545   550   555   560

Leu His Pro Ile His Lys Leu Leu Val Pro His Tyr Lys Asp Thr Met
             565   570   575

Phe Ile Asn Ala Ser Ala Arg Gln Val Leu Ile Asn Ala Asn Gly Leu
             580   585   590

Ile Glu Thr Thr His Tyr Pro Ser Lys Tyr Ser Met Glu Leu Ser Ser
        595   600   605

Ile Leu Tyr Lys Asp Trp Thr Phe Pro Asp Gln Ala Leu Pro Asn Asn
    610   615   620

Leu Met Lys Arg Gly Leu Ala Val Glu Asp Ser Ser Ala Pro His Gly
625   630   635   640

Leu Arg Leu Leu Ile Asn Asp Tyr Pro Phe Ala Val Asp Gly Leu Asp
             645   650   655

Ile Trp Ser Ala Ile Lys Thr Trp Val Gln Asp Tyr Cys Cys Leu Tyr
        660   665   670

Tyr Lys Asp Asp Asn Ala Val Gln Asn Asp Phe Glu Leu Gln Ser Trp
    675   680   685

Trp Asn Glu Leu Arg Glu Lys Gly His Ala Asp Lys Lys His Glu Pro
690   695   700

Trp Trp Pro Lys Met Gln Thr Leu Ser Glu Leu Ile Glu Ser Cys Thr
705   710   715   720

Thr Ile Ile Trp Ile Ala Ser Ala Leu His Ala Ala Val Asn Phe Gly
             725   730   735

Gln Tyr Pro Tyr Gly Gly Tyr Ile Leu Asn Arg Pro Thr Thr Ser Arg
        740   745   750

Arg Phe Met Pro Glu Val Gly Thr Ala Glu Tyr Lys Glu Leu Glu Ser
    755   760   765

Asn Pro Glu Lys Ala Phe Leu Arg Thr Ile Cys Ser Glu Leu Gln Ala
    770   775   780

Leu Val Ser Ile Ser Ile Ile Glu Ile Leu Ser Lys His Ala Ser Asp
785   790   795   800

Glu Val Tyr Leu Gly Gln Arg Ala Ser Ile Asp Trp Thr Ser Asp Lys
             805   810   815

Ile Ala Leu Glu Ala Phe Glu Lys Phe Gly Lys Asn Leu Phe Glu Val
    820   825   830

Glu Asn Arg Ile Met Glu Arg Asn Lys Glu Val Asn Leu Lys Asn Arg
        835   840   845

Ser Gly Pro Val Asn Leu Pro Tyr Thr Leu Leu Val Pro Ser Ser Asn
    850   855   860

Glu Gly Leu Thr Gly Arg Gly Ile Pro Asn Ser Ile Ser Ile
865   870   875